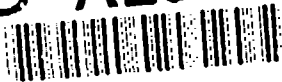


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**THE EVOLUTION
OF THE ARMORED FORCE,
1920-1940**

BY

LIEUTENANT COLONEL EDWARD J. O'SHAUGHNESSY, JR.
United States Army

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war demanded the rapid fielding of armored divisions. The fact that fourteen divisions were fielded in four years, when none had existed previously, is testimony to their efforts. This paper is told from their perspective. In the face of significant institutional obstacles these tank advocates responded to a higher calling. The inter-war period has parallels for us today. Once again we have declared victory, are downsizing our force structure and slashing our defense budget. Will we retain and encourage within our ranks visionaries and advocates to prepare our military for future conflict as we enter a new "lean years" era?

USAWC MILITARY STUDIES PROGRAM PAPER

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THE EVOLUTION OF THE ARMORED FORCE, 1920-1940

AN INDIVIDUAL STUDY PROJECT

by

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DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

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ABSTRACT

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Introduction

Conventional wisdom among Army officers today has it that little effort was applied in the interwar years towards the development of what today we call the heavy division, the armored combined arms team, highly mobile and balanced for decisive action. The common understanding is that the Depression budget, branch rivalries, but most importantly (and incorrectly) a lack of professional foresight and attention were the characteristics of the "lean years," as the period is sometimes called.

When one superficially explores the subject of armored development during the interwar years, the contemporary branch literature leads one to believe that origin of the Armored Force of 1940 was almost exclusively the result of the Cavalry branch's evolution. Most of the contemporary credit goes to Adna Chaffee, the "Father of the Armored Force," and the 7th Cavalry Brigade (Mechanized) at Fort Knox.

But is this the complete story? Is there not more to it? The rapid organization of armored divisions from early 1940, when there existed none, to 1944 when there existed fourteen, begs several questions. How was it that armored force structure and doctrine seemingly grew to maturity so rapidly? Was there not any foundation laid between the wars? Was there not any continuity from the World War I Tank Corps experience and lessons learned that was carried over to the armored units that came of age in World War II?

Surprisingly, the answers to these questions are easily discovered and rich in detail. Contrary to the common perception, it simply was not the case that everyone was asleep at the switch. In fact the case can be made that the creation of the Armored Force in 1940 was nothing more than another incremental step in the evolution of force structure that had been nonstop since the tank became a US weapon system.

The story told here is one of constant and progressive work by a number of visionaries and armored force advocates against significant institutional barriers. While these historical figures were represented in several branches they were predominantly grouped around infantry-tank units. These armored force advocates, of whom the corporate Armored Force knows so little today, served continuously with tanks from the end of World War I and provided a test bed for ideas and experimentation until the infantry-tank units, along with Adna Chaffee's mechanized cavalry brigade, were incorporated to create the Armored Force in 1940.

This paper will attempt to tell the story from the perspective of those who made the continuous and progressive contributions to the development of the armored force concept. The methodology will draw heavily on articles published in the service journals at the time, linked to the historical background. There are frequent quotes taken from the service journals. These quotes were especially chosen because they seem best able to tell the story, and because in some cases the quotes seem so contemporary today.¹

For various reasons that would take up too much space here, the senior Army leadership frequently failed to follow through with the armored work well begun by these quoted pioneers. Perhaps that in itself is a lesson to us today. The lesson illustrates the power of senior leadership as an agent of change and the necessity for strategic vision. That lesson would argue for a continuity of leadership to keep selected programs going, even on a reduced scale if economic winds blow ill.

Finally, this paper is dedicated to a handful of tank advocates, more often identified as mavericks than visionaries in their lifetime, who are so frequently quoted here. Despite frequent censure and career disappointments they responded to a higher calling. It is this author's belief that these obscure figures performed an invaluable service to the nation by advancing the cause and creating the conditions for the US Army to meet the Axis armored threat at the critical time. Perhaps in our current time of downsizing and budget cuts there will exist a new generation of advocates for future force design and doctrine who can take heart and instruction from like-minded predecessors of a previous age.

The Demise of the Tank Corps

The separate US Tank Corps, created overseas by the necessity of trench warfare, returned from France and England in the spring of 1919 flush with victory and energized by the potential of the new weapon. Fort George Meade, Maryland, was designated as the demobilization point and subsequently as the new home of the Tank Corps. All tank units, American Expeditionary Force (AEF) and stateside, would close ranks at Fort Meade by late summer of that year.

Among the early notables who took up duties at their new station was Brigadier General Samuel D. Rockenbach, former AEF Tank Corps Chief and now in a similar capacity as Chief of the Tank Corps and the post commander. Two AEF brigade commanders, Lieutenant Colonel Henry E. Mitchell and Lieutenant Colonel George S. Patton, resumed command of two consolidated and much reduced brigades of heavy and light tanks respectively. Major Sereno Brett, who had commanded a battalion in combat and, assumed Patton's duties as the acting brigade commander when Patton was wounded, was present.² Major Dwight D. Eisenhower, who had run the stateside tank school at Camp Colt, Gettysburg, would shortly replace Lieutenant Colonel Mitchell, upon Mitchell's departure, as the commander of the brigade of heavy tanks. Finally, a Cavalry officer named Captain Clarence C. Benson, who would later take on a significant role, was part of the team.

With the Tank Corps now assembled at Fort Meade the first business at hand was the demobilization of the troops who wished to be released and the deprocessing of 213 French-made Renault and 32 British-made Mark V heavy tanks, all used by US tank forces overseas and all recorded as in various conditions of unserviceability.³ Next Rockenbach and his remaining tank cadre began the business of building back up. The newly manufactured American replacement light and heavy tanks, the M1917 and Mark VIII respectively, were accepted and processed as replacements to the French and British issued tanks. Two tank brigades were organized from the four that returned from overseas and a functioning tank center and school were established.

All this necessary and important business took many months to accomplish and caused Fort Meade to be a post characterized as buzzing with activity and potential. With several hundred new tanks, lessons to be applied from the war, fertile minds to apply the lessons, and ample training area within the confines of the post -- the Tank Corps looked like the place to be.

However during this very same time, not too many miles to the south, Congress was pondering the size and structure of the post-war Army, and with the inevitable downsizing, the fate of the Tank Corps. Senior Army officers, such as General John Pershing and Colonel George C. Marshall, were called to testify before Congress and provide input. The result was the National Defense Act of 1920, which became law on 4 June. Although that law created a separate Air Corps it abruptly terminated the independent status of the Tank Corps and declared the tank an

auxiliary arm of the Infantry. Since slow moving tanks had crept along with the Infantry in France, the Infantry-oriented senior Army leadership recommended that savings could be achieved by assigning to Infantry all tanks and tank development.⁴

It is fair to say that there was no malice aforethought in the decision of an economy-minded Congress acting upon advice from well-intended general officers. However the timing was truly ironic. Tank and armored doctrine were poised in the starting block about to take off when the rules changed. Certainly the civilian and senior military leadership did not see it this way, but the ramifications of this act would be far reaching in modernization and force development of the Army. Because of specific language in the act relegating "tank" issues to the Infantry, the Army would spend more than twenty plus years struggling to advance the state of the art in a very inefficient manner.

The ramifications were felt in the personnel field too. Since tanks would now be "infantry weapons," Tank Corps officers, previously drawn from several branches, would now by fiat be Infantrymen "detailed" to tanks. From a career development point of view the future no longer looked so promising.

The reactions and results were varied. Some officers sought transfers back to a previous branch. Patton and Mitchell, the two brigade commanders, were among the first to abandon the new arrangement. Patton rejoined the Cavalry and Mitchell, also a Cavalry officer, left to become an assistant professor of military science at Norwich.⁵ Some officers would accept the

detail initially and serve briefly, but for reasons known only to them and their families would shortly leave the service. Many other detailed infantry-tank officers would become frustrated at different points in their career and leave the detail duty for the comfort of the mainstream of their branch. We will never know what talent did not come the way of tank-infantry because of the difficulty that would accompany the service of two mutually exclusive masters within one branch.

Infantry-Tanks

The successful development and value of the arm in the future depends on the sympathy and support it is given.

Report of the Chief of the Tank Corps - 30 June 1920

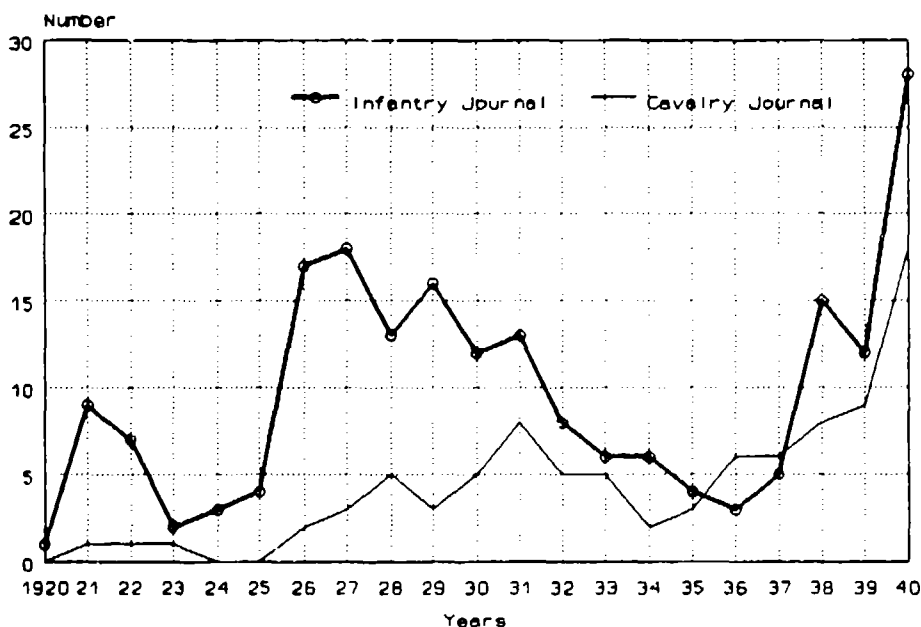
Despite the inopportune subordination of tanks to Infantry, the wartime experiences and the potential for future use had fired the imaginations of a cadre of tank enthusiasts. From the very beginning a number of these advocates and visionaries began to develop their thoughts and, in the process, publicly to question the validity of the status quo. Soon they began to pose insightful questions, make known their thoughts and propose alternative force structures. While tank doctrine being written at the Tank School located at Fort Meade repeated the party line, i.e. that tanks existed for the sole purpose of supporting infantry assaults in the "accompanying role" -- the articles in the service journals written by tank officers trained at Fort Meade frequently showed a more independent and futuristic bent.

A close reading of the service journals of the day shows an activity in tank and armored development increasingly at odds

with the doctrinal "accompanying" role and also at odds with what is incorrectly believed to be a universal disinterest in the subject of armored warfare. The frequency chart below tracks the publication of articles on tanks and armored subjects for both The Infantry Journal and The Cavalry Journal during the so-called "lean years." While the frequency plots certainly don't by themselves tell a complete story, it would seem reasonable to assume that frequency does reveal the degree of interest generated by tank subjects and a degree of tolerance for discussion that was acceptable, at least by the publisher.

Of course a more complete story can be told if the historical background can be established to link the publication dates to significant events that influenced the writer. Throughout this paper an attempt will be made to establish that linkage and to recreate the environment in which the author wrote.

Tank and Armored Articles
Published in the Service Journals



One of the first to try his hand at publication was then Captain D. D. Eisenhower, with an article in the November 1920 edition of The Infantry Journal entitled "A Tank Discussion." The article's stated intent was to familiarize the reading audience with the tanks then in existence while also attempting to explore future possibilities:

The sole purpose then of any discussion...is to place facts before the officer as will enable him to determine by sane and sound reasoning whether in future wars the tanks will be a profitable adjunct to the Infantry.

In his article Eisenhower postulated that a fast and mechanically reliable medium tank would soon be attainable. He then proposed placing a company of these fast tanks in the motorized battalion of an infantry division to replace the then-existing machine gun company. With this organization outlined he proceeded to discuss possible missions of that tank company.

One possible mission he discussed was to use the fire power and high mobility of these fast tanks to charge the flank of an attacking force:

It has been practically an axiom that tanks are of use only on the offensive. With the improved tank now under discussion, it seems reasonable that this limitation will be removed in part, at least. The charge of a German cavalry brigade at Vionville, in 1870, against the flank of the advancing French infantry, saved the army corps from certain annihilation.... There is no doubt that in similar circumstances in the future tanks will be called upon to use their ability of swift movement and great fire power in this way against the flanks of attacking forces.⁶

Although the article appears today very conservative and logical in its use of tanks, what it advocated was not the experience in World War I and not the use expected by senior

Infantrymen. Eisenhower related in later years that his article was perceived as very unorthodox and dangerous by the Chief of Infantry. Eisenhower said he was called to appear before the Chief of Infantry and threatened with courtmartial if he ever again published anything incompatible with accepted Infantry doctrine.⁷ As a result Eisenhower took heed and did not publish again on tank subjects. When the intervention of Fox Connor allowed Eisenhower to escape Fort Meade and detailed tank duty, he seized the opportunity.

During this timeframe Fort Meade received a Major Bradford C. Chynoweth, who ironically was sent to the Tank School by the Chief of Infantry because he wanted good Infantry officers trained with tanks. Initially Colonel Rockenbach had been happy to receive Chynoweth, who appeared to be an officer of great potential. Much to Rockenbach's dismay, Chynoweth too proved himself to be a visionary with a penchant also to publish his visions -- three far-seeing articles in successive months in 1921. The first two were in The Infantry Journal and the third appeared The Cavalry Journal. All bear consideration in detail.

In May 1921, "Tank Infantry" made its appearance taking the position that the tank had revolutionized infantry tactics. Chynoweth began by questioning the very core of the Infantry branch: "The question arises here as to the ultimate nature of infantry. Infantry is not the rifleman. Infantry is the man in war." The tank was not intended to trudge along at the pace of the foot soldier but "contains within itself the elements of

great fire power, freedom of maneuver, and protection" and "is the essence of shock effect."⁸

The June 1921 edition expanded the theme with an article entitled "Mechanical Transport." Here Chynoweth argued that the key to success in warfare was retaining freedom of movement. This retention could only be done with off road, cross-country vehicles. Chynoweth proposed to use the tank chassis as the type for all military transport:

Hence, let us strip these modern tanks of their bodies and study them naked. Let us consider them in all sizes and shapes...This one to carry a machine gun. The next a seventy-five. The third will mount a battery of guns. The fourth will transport several squads of men.

Chynoweth said what was needed was an entirely mechanized Army. He dealt with the expected naysayers:

Of course, one can hear objections to this; it costs too much, or this or that; just as there were objections to the introduction of machinery in peaceful production. But the truth is that machinery in war will cost less, as it did in peace.... The "mechanical army" is an excellent objective. If it is a dream, then all objectives are dreams to be accomplished in fact.⁹

A month later Chynoweth published "Cavalry Tanks" in The Cavalry Journal. Again we see a visionary and a maverick at work. Chynoweth started his article with several provocative questions and some personal thoughts:

What is its (the tank) role and how must it be organized? Should it have its own organization, a separate corps, directing its action in cooperation with other arms, or should it be assigned to existing arms? These are its questions. Since we so conservatively hold to previous ideas of organization and refuse to create a new arm whose very existence contradicts our accepted tactical principles, it has been decided to assign tanks to the arm which they

supported during the war. Hence we today have the infantry tanks.

But the tank of the War was not the tank of the future, Chynoweth argued. The next generation of tanks would be fast and capable of independent movement. Therefore, should not the Cavalry consider the use of tanks for traditional cavalry missions? The proliferation of the machine gun, mechanization of other nation's armies, and power of the future defense argued for the US Cavalry to accept the tank for combat missions:

It is, indeed, much to be hoped, therefore, that the cavalry come to the use of tanks. They should look upon the tank, not as a special weapon devised for unusual conditions, but as a natural and normal auxiliary to the horse. From the cavalry standpoint, the tank is truly no more than a great iron horse.¹⁰

Chynoweth had sent Patton a copy of this last article prior to publication and asked for Patton's comments. Patton returned correspondence and his response was published immediately behind Chynoweth's article. Patton's response surprisingly lacked the complementary vision one would have expected. Patton acknowledged that he was a believer in tanks, but could not see any diminishing in the future role of horse cavalry. Rather, Patton advocated a return to the separate Tank Corps.¹¹

These three articles probably generated a lot of discussion at Fort Meade and Fort Benning.¹² As early as 1921 there is thought of mechanization across the arms, utilizing a standard chassis, with the aim of increasing tactical freedom of maneuver. Although this vision would eventually come to pass Chynoweth states in his personal papers that he now became persona non grata with Colonel Rockenbach. After several counselling

sessions with his superior officer he too made his escape from Fort Meade. In June 1922 he departed for duty with an Army marksmanship team.¹³

It appears that in 1922 the limits of tolerance for progressive tank articles in The Infantry Journal had been reached, at least for a time. With both Eisenhower's and Chynoweth's chastisement and departure within six months of each other, like-minded potential authors were fairly warned. To add credibility to this supposition is the reprint of a New York Times article that appeared in the editor's section of the August 1922 issue of The Infantry Journal. In that reprint the editor took delight in noting that the trend of "reputable" civilian newspapers not towards advancing the cause of mechanization, but towards that of the leg infantryman. For the next several years the articles in The Infantry Journal were noncontroversial, and dealt with factual and doctrinal tank subjects.

In February 1925 Captain Sereno Brett published an article entitled "Tank Combat Principles." Brett was one of notables mentioned earlier who was present at the beginning of the infantry-tank experience. At this point he was again commanding a light tank battalion, now at Fort Meade.¹⁴ The editor of The Infantry Journal duly noted him as an authority on tanks. The editor also noted on the bottom of the first page of Brett's article that Brett's article was "acceptable" in that:

His article on combat principles is based on the Training Regulations on the subject which have not yet appeared for issue to the service. These regulations were approved by the Chief of Infantry and forwarded to the Adjutant General of the Army in December 1924. - Editor.

Apparently when wishing to publish an article touching on tank doctrine a stamp of approval -- something akin to a bishop's nihil obstat -- was in order. Certainly Brett was very careful in his approach:

In the following discussion no attempt has been made to draw upon the imagination as to what tanks of new design (pilot models of which are now under test) or tanks of the future will be able to accomplish. This discussion is based entirely on tanks now in use by the service.¹⁵

Brett articulated the position that tanks were an infantry weapon whose mission was to assist the Infantry commander in support of the rifleman. The principles were clearly based upon the reality of the M1917 light tank.

An External Catalyst

By 1926 the publication of articles tank subjects had risen noticeably and the trend was sustained for several years (See chart on page 8). Why the increased publication of tank related articles? Several likely reasons.

A changing of the guard at Fort Meade may have contributed to a more liberal environment. The conservative Colonel Rockenbach received his promotion to brigadier general and departed. He was replaced by officers, such as Colonels James K. Parsons, O. S. Eskridge and H. L. Cooper, who by the available evidence appeared more inclined to allow their officers to deviate from doctrine.¹⁶

More importantly however were the actions of the British in their efforts at mechanization. American tankers had been

following those events by reading The Royal Tank Corps Journal for years, but in 1927 selected British articles started to be reprinted in The Infantry Journal. These articles included one by the British tank proponent, Colonel J. C. F. Fuller, who was being widely discussed in US tank circles. Fuller advocated a small mechanized army organized around tank units. When Fuller's "Tactics and Mechanization" appeared in May 1927, The Infantry Journal, no doubt anticipating an unpleasant reaction to Fuller's bold ideas, solicited input from several sources as counter points. Rockenbach, no longer associated with the Tank School but available for comment, stated that the US Army should stick to a light tank to assist the infantry attack and a medium tank to support the Cavalry. The Assistant Commandant of the Infantry School, Colonel Cohen, took a truly visceral approach: Mechanization was not that important; rather, winning in war required "bayonets in the pit of the stomach of any enemy standing in the way."

While senior officers took a cautionary approach a relatively junior Infantry Tank officer, Major Merrill E. Spaulding, responded that the US should experiment along the lines Fuller proposed.¹⁷ In fact the British were experimenting themselves. During this same year they had put together an Experimental Mechanised Force featuring a combined arms team. This organization used light and medium tanks and an assortment of mechanized combat and combat support arms. The US Secretary of War, Dwight F. Davis, while touring Europe, witnessed the Experimental Mechanised Force maneuver on the Salisbury Plain.

He was impressed by what he saw and upon his return he directed the War Department to establish a similar force.¹⁸

The Infantry Journal ended the year with a December article by the Chief of Infantry wondering about the future of a mechanized force and Infantry's contribution to it.

The Experimental Mechanized Force

In December of 1927 the Army Chief of Staff approved a concept plan for an Experimental Mechanized Force (EMF) to assemble at Fort Meade the following summer. This must have been exciting news for the Infantry Tank officers at the Tank School, The Infantry Journal articles published during that year reflect a sense of a new start. While there appeared the usual articles on the checkered developments of a fast breed of tanks, there also appeared articles on the need for an organization to capture totally the new tactics that fast tanks and other self-propelled vehicles would surely dictate.

In May 1928 appeared the first of several very thorough articles by Major Ralph E. Jones, a senior tactical instructor at the Tank School at Fort Meade. At this point it can be documented that the combined arms thinking of the British school of thought was being taught by at least some tactical instructors the Tank School.¹⁹ Jones' "The Tactical Influence of Recent Tank Development" addressed the dilemma facing the tank instructors who were teaching the unorthodox doctrine of mechanized combined arms warfare:

...we must now, however recognize the facts and the significance of recent developments. We are confronted with a new problem of unusual importance, and the sooner we get seriously to work at solving it, the better. Tanks have been radically improved and the improvements demand corresponding modifications in tactics.

He developed his theme by discussing two general methods in which the modern tank could be used. First, the status quo, tanks may be used in the accompanying role with infantry. But the more valuable use, Jones said, was in combination with armored cars, self-propelled howitzers and other weapons as a consolidated force -- independent of infantry but in cooperation with the larger force. Discounting current Infantry doctrine Jones said "the fact remains that fast tanks in an independent force will be an absolute necessity of the future."²⁰

Jones next discussed of the mission and organization of what he called "an armored unit." The first mission was the defeat of a hostile armored force. Other missions were reconnaissance and screening, harassing and paralyzing a hostile main force, and destroying a main hostile force in cooperation with its own main force. To do these missions the armored force would have to be balanced and relatively self-supporting. Jones went on to describe necessary complements to fast tanks: artillery, anti-aircraft weapons, scouting vehicles, antitank weapons, and the expected combat support services.

In July Jones expanded his treatment of organization in "Future Tank Organization." His premise was that the "solution of the motorization-in-warfare problem is, especially just now, passing through a very unstable and progressive phase." He then

restated the three problems confronting the army: What should be the combat purposes of mechanized vehicles? What vehicle types will best suit the purposes? What is the best suitable organization?

Showing his prescience, Jones repeated his theme of the flexible combined arms force and its roles. His missions are clearly the ones that are recognized today as those of our armored forces. He combined the traditional infantry mission of closing with the main force and destroying it with traditional cavalry missions of screening, reconnaissance, turning movements, deep strikes, and exploitation.

In summary Major Jones proposed three highly mobile task force organizations for the range of missions he expected in future combat. In all cases the significant feature was the presence of combined arms, mounted on "self-propelled (not towed)" vehicles.²¹ When the much-anticipated Experimental Mechanized Force assembled at Fort Meade on 1 July 1928, it was the first truly combined arms mechanized force in the US Army. The core of the force consisted of the two infantry-tank battalions plus a separate company, the 4th Tank Company, of the 1st Tank Regiment. One battalion was still equipped with M1917 light tanks; the other, with Mark VIII heavy tanks. Both tank types were of 1919 vintage.

Although the vast majority of the tanks were obsolete, four of the new T1-E1 Cunningham tanks and two open carriers on the same chassis arrived just in time. All were assigned to the 4th Tank Company. Reaching speeds of 18 mph, they were considered

"fast" tanks. These six armored vehicles were pilot models, attested to by the "T" designation as a test vehicle.²² Other units rounded out the mechanized force. Among these were a cavalry armored car troop -- the only one in the inventory at the time. A battalion of motorized infantry was "porteed" on trucks. There were also a battalion of towed artillery, a company of engineers, a signal company, a medical detachment, an ammunition truck detachment and an observation squadron.

Colonel O. S. Eskridge, the post commander, in his role as the Chief of Infantry-Tanks commanded this force. His mission was clearly stated:

by practical tests in tactical and strategic employments, (you) will experiment with its organization and equipment with a view to developing correct doctrine with respect to motorization and mechanization of appropriate units of the Army.²³

His mission proved impossible. The Experimental Mechanized Force only remained in existence for three months. The preponderance of equipment -- old tanks and trucks -- was just not up to the rigors of the test. Equipment failures caused excessive downtime that precluded thoroughly shaking down tactics. So it was decided that further study was needed, but with budget appropriations for better vehicles and materiel. Still, milestones had been reached: For that short time branches had come together for the common purpose of working towards a mechanized combined arms force.

Publications following the EMF showed the path was not completely cleared. Major Clarence C. Benson, a Cavalry officer and one of the notables mentioned at the outset of the tank

experience at Fort Meade, was a member of the Experimental Mechanized Force. In January 1929 his thoughts on that experience were published in both The Cavalry Journal and The Infantry Journal under the title "Mechanization - Aloft and Alow." As Benson's thoughts were not in accordance with doctrine The Infantry Journal published his article with precautionary comments by the editor as the lead off:

We are glad to place them (the author's views) before the Infantry even though they differ from our own in one important respect - namely, the establishment of a separate Mechanized Branch. - Editor.

Benson admitted that the equipment of the EMF varied from old to new and that the insufficient number of fast armored vehicles was a problem. Still he found much to be excited about.

Three months of close association and cooperation brought out a variety of ideas on the organization of a Mechanized Force. There were many hot discussions; lieutenants, captains, majors, and colonels - we all contributed our views and occasionally listened to the opinions of others. Those friendly discussions still continue, for no one, not even the War Department, has as yet come out with an "approved solution".

Benson went on to provide his recommendations "in the absence of authoritative opinion." He repeated the mission of a independent mechanized force as one of deep and decisive action. The mechanized force should therefore be "well balanced and highly mobile." He proposed a brigade structure of one regiment of fast tanks, one regiment of mechanized artillery, one battalion of mechanized infantry, and contingents of special troops. It would take at least a mechanized unit of brigade strength fully to "test the soundness of organization, to test

new equipment, and to develop methods of training." Finally he addressed the plaguing issue of proponentcy or ownership:

Without half trying we evolve a new branch of the Army.... To imbed these highly mobile units in slow moving masses of Infantry would be wasteful. We cannot expect Infantrymen or Cavalrymen to specialize on mechanization in addition to their other duties; and yet, without specialization of a high order, mechanization will land in the ditch.²⁴

So, in Benson's view, the future lay in some branch organization other than Infantry or Cavalry. One possible solution was to resurrect the Tank Corps. Whatever was decided, as Benson saw it, "A single responsible agency to execute War Department policies on these matters is needed."

A New and Permanent Mechanized Force

The Army Assistant Chief of Staff (G-3), Brigadier General Frank Parker, also thought that the development of mechanized forces needed to get out from underneath branch interference and warranted special shepherding. Accordingly, he recommended to the Secretary of the War during the spring of 1928 that the Army create a Mechanized Board to study the matter and develop a course of action. The recommendation was accepted, and a board of officers was appointed and met initially in May 1928.

Interestingly, of the officers appointed to the board, not one name appears familiar among those in the tank work done by the Infantry tankers of the Tank School, the Tank Board, or the tank units. The "mechanization board," as it came to be called, was comprised of staff officers from the concerned branches who

were stationed in Washington, D.C. -- specifically at the headquarters of the Army or at the offices of the various Chiefs of the branches. One name, new to the subject at the time but since prominent, was that of Major Adna Chaffee. Newly assigned to the G3 staff, Chaffee was a Cavalry officer and the son of a former Chief of Staff. His new assignment introduced him to mechanization.

The board sought out subject matter experts and attempted to learn all they could. "Individually and collectively" the board was present for many of the Experimental Mechanized Force demonstrations at Fort Meade during its brief existence. On 1 October 1928 the board published their very thorough report. The report recommended creating a permanent Mechanized Force to be organized in Fiscal Year 1931. The recommendation was approved by the Chief of Staff, Charles P. Summerall, and Secretary of War Dwight Davis.²⁵

Organizationally, the recommendations of the board made the Mechanized Force on paper look very much like the EMF. However eventually the Mechanized Force would have only one tank battalion and two mechanized infantry battalions, rather than vice versa, as had been the case with the EMF. Appropriations were requested so that the force could be modernized over the course of three successive fiscal years. The proposed base vehicle was the T1-E1 tank and tank chassis. These prototypes had held up reasonably well during their time with the EMF.²⁶

Owing to ever-present branch jealousies and concerns, command and control of the Mechanized Force remained a delicate matter.²⁷

Recognizing that the board's charter was only to recommend a structure for the study of mechanized forces, the board was not prepared to select a parent branch or to create a separate branch. Still positive direction and significant progress in tactics and organization were essential. Accordingly the board recommended that the Mechanized Force be commanded by a general officer, who, "at least for the earlier years," should be "directly responsible to the War Department (Chief of Staff)."

In its report, the board identified a critical factor that the Army effectively addressed. "The real problem is to find the man" and to provide him "a very small staff of three carefully selected officers."²⁸ The man eventually selected to command the force was not a general officer -- for the brigade shrank to a regiment before it was organized -- but Colonel Daniel Van Voorhis. At the time commanding the 12th Cavalry in Texas, Van Voorhis knew nothing about tanks, but was well known for his organizational and administrative abilities. These were the talents that this new and unique force would certainly need in its commander. Moreover Van Voorhis was respected by all who knew him, and proved dedicated to his mission and the independence of the Mechanized Force.²⁹ The board also selected Major Sereno E. Brett, then at Fort Benning and teaching tank tactics, as Van Voorhis' second in command. This choice also was good for the Mechanized Force. Brett was recognized as one of the most experienced, if not the most experienced Infantry Tank officer.³⁰

While the Mechanization Board and members of the Army staff continued to bring about the Mechanized Force, articles in the Journals revealed both the concerns and hopes of the tank advocates in their anticipation of this event.

In the March 1929, obviously not aware of the considerable care with which the Mechanization Board established centralized control of the Mechanized Force, Major Ralph E. Jones voiced just such concerns. "The Weak Spot in Military Progress" articulated the problems associated with the lack of centralization in the Army to test new ideas. Without a doubt, in Jones' opinion, the system of independent branch chiefs was both inefficient and ineffective. Jones wished that some higher authority existed so that concepts could be fairly tested. His complaint is illustrated by the struggle to find a tank that was acceptable to the Chief of Infantry -- the user; the Chief of Ordnance -- the provider; and the Chief of Engineers who provided the military bridging assets.³¹ Jones predicted that any efforts to create a suitable mechanized organization would fail if one agency was not clearly placed in charge.

Unlike Jones, who was not in the know, Major Levin H. Campbell, Jr., an Ordnance Officer, was a member of the Mechanized Board and knew the board's recommendations. In April 1929, he published an article in The Infantry Journal entitled "A New Weapon of Warfare - the Mechanized Force." Campbell's article discussed the subject of a mechanized force taking the position that technology had driven the need for a change in tank tactics. Fast, reliable tanks and several armored chassis were

available. It was now practical and proper to organize an integrated mechanized fighting unit.

The Cunningham T1-E1 tank types were discussed and visually introduced with a number of photographs. The T1-E1 tank would be the core vehicle and the T1-E1 chassis would be the chassis for the mechanized infantry carriers, the self-propelled artillery, 4.2 inch mortars, the antiaircraft weapons, and cargo carriers. This application was in line with the recommendations of the Mechanized Board, which called for as much commonality of mechanized vehicle types as possible. This approach, which made much sense then and still does today, was initially critical, both logistically and economically: The industrial base was not geared up for mass production of military combat vehicles and vehicle repair parts. Campbell echoed the British tank enthusiast, Colonel J.F.C. Fuller, that the future lay in tanks and other armored vehicles. In Campbell's view, although the ideal tank type had not yet been manufactured, the Army should not wait:

We can afford...to equip and maintain a small modern mechanized force, which will serve as a laboratory for the development of machines and the training of personnel in the tactical employment of such an arm..... We should make a start; the developments and logical improvements will follow rapidly.³²

Major Ralph E. Jones, still a Tank School instructor, remained active and visible in the discussions. Jones clearly tracked the planning of the mechanized force and began to wonder if a single mechanized force was really the best approach. His July 1928 article, "Future Tank Organization," had argued for three types of organizations featuring different combinations of tanks,

armored cars, and such support arms as self-propelled artillery. The mission drove the organization, he argued. Exactly one year later in "Shall We Armor or Mechanize?" Jones discussed the possibilities offered by the organization of two possible forces. One was armored forces that would fight mounted and travel on very fast tanks -- speeds up to 30 mph. Second, motorized forces which would travel on trucks and be limited to roads. These two organizations could be task-organized to produce a mechanized force when a mission dictated.

Jones' later article showed progress both in his own sophistication and in that of technology. Jones acknowledged that organizing three separate forces would probably be cost-prohibitive. Therefore he proposed a compromise: Create two permanent forces, and make the third organization -- a mechanized force -- from the first two as warranted. The other factor that distinguished the later article from the earlier article was the emphasis on the demonstrated capabilities of the Christie tank models, the latest of which made its debut in the autumn of 1928. These tanks could do 30 mph and had a unique suspension which greatly improved the ride. The contrast to the T1-E1 tank, which could only travel up to 18 mph, was apparent in Jones' later article and thinking.³³

The latest model Christie tank, the M1940, also favorably impressed others. In "The New Christie, Model 1940," in the September 1929 edition of The Infantry Journal, Major C. C. Benson argued for the Christie chassis as the prototype for the future armored vehicles in **mechanized divisions**. Like Campbell

and others, Benson made the case that all branches would benefit by adopting one basic vehicle type:

(Standardization) is a vitally important factor in the efficiency of a mechanized force. This fact bears directly upon the selection of automotive equipment for all branches that will participate in the formation of our future mechanized divisions.

Benson concluded his article with a note of frustration. The latest Christie model was really a state-of-the-art vehicle: The manufacturer's designation of M1940 was appropriate because, as Benson stated, the vehicle was ten years ahead of its time. Although with this vehicle Benson felt that the US Army was now technologically ahead of the British, the British were still tactically ahead, because they had procured fast tanks in sufficient quantity to organize mechanized forces, and had experimented extensively with these forces. "Technical excellence will avail us little until tactical thought in our service as a whole catches up with the process."³⁴ Benson was effectively saying, "Lets get on with it."

In December 1929, "Our Tanks - Present Ideas of Tank Tactics," a third article in the "Our Tanks" series by Major Jones was published. Jones intended to bring the reading audience up to date with the current thinking of the Tank School on mechanized combined-arms doctrine. He stated that "official promulgation" was not likely for some time and that his article "may throw some light on the probable substance of our tank doctrine of the near future." Interestingly no editorial comment appeared on this article on tank tactics, unlike as in previous years.

Major Jones introduced his subject by saying that the technical progress made in tank development had benefits for the entire Army: Soon the Army would find itself "using speedy cross-country carriers for various purposes and in large numbers." Combat mobility would dictate this, Jones reasoned. Although Jones recognized the need for tank units for several uses, he repeated his arguments to create an armored force that will fight mounted and to combine armored and motorized units to create a temporary mechanized force for "good economy."

Jones explained multiple missions for the new breed of fast tanks and the different organizations that supported the different missions. He stated that "the modern fast tank is a new weapon" and identified two opposite fallacious ideas regarding it:

First Fallacy: 'As in the World War, tanks are tanks. They help infantry troops to get forward, and that's about all there is to it.' This is the extremely conservative view, and it is, of course, very incorrect....

Second Fallacy: 'In the next great war, our Army may be relatively small but it will be organized as a large mechanized force.' This is the extremely radical and visionary view....but unfortunately it is quite out of step with governing practical considerations....³⁵

In keeping with his view of the current tank as a new weapon, Jones emphasized logical tactical applications of tank units and formations in the offense and mentioned the defense only in closing. Although obstacles and antitank guns would be important, the best defense against tanks would be other tanks. Tactical thought had come a long way since Sereno Brett's article

just four years earlier, which had reaffirmed the notion that tanks were merely infantry-support weapons.

The conception of armored force structure from brigade to division size was a subject of interest not just at the Tank School. In December 1929 came, "Organization and Composition of a Mechanized Force," written by Lieutenant Dache M. Reeves, of the Air Corps, who was the Division Air Officer for the infantry division stationed in the Philippines. Reeves had written the editor of The Infantry Journal expressing his reasons for wishing to be published, and the editor thought his reasons important enough to quote:

There has been much discussion of armored forces, but mostly of a general nature. I believe that the time has come to go into detail... It is important that the Army have a permanent armored force, however weak and it is the hope that this discussion may aid the cause that I have written it.

Lieutenant Reeves then discussed the characteristics of contemporary fast tanks and his conclusions from the Experimental Mechanized Force activities of the year before. From this discussion he proposed in great detail the creation of a armored division, including tables of organization to illustrate his proposal. His proposed divisional structure called for 120 fast tanks and a reasonable combined-arms mix, all mechanized. Acknowledging this organization to be too expensive in peace, Lieutenant Reeves then proposed a peacetime organization consisting of 30 tanks and other arms equivalent to a reduced regiment. He concluded that even a small but permanent force was better than any temporary force to "make definite progress" toward the solution of armored force operations.³⁶

Others made a similar plea for permanence. Major Sereno Brett added a practitioners plea in January 1930 with "Tank Reorganization." "Reorganization seems to be the order of the day" was the introductory sentence and truly Brett wished it would happen. Brett moreover reflected a worldly approach of one who had commanded several tank battalions and had been handicapped by the lack of a balanced team to support his training exercises and missions. Brett, looking outward, warned that potential enemies were arming themselves with tank units while the US was still using an organization found lacking in World War I. He saw other armies in the world reorganizing with armored vehicles and serious study being conducted everywhere but in the US Army.

In the face of all these developments and the ever increasing number of tank enemies, our tank organization remains practically the same as 1918. We have not even applied to our post-war tank organization the lessons we learned in combat.

Brett criticized the current situation as one of severe limitations to battlefield survival.

If he (the tank officer) has been analytical to the smallest degree he will have come to the realization that he has not in his own command those elements, normal to every battle, which will give him a powerful, well-balanced weapon. He must ask outside agencies for his normal needs - his smoke, his artillery protecting fires, his engineer support, and his communications. Also, he realizes that his supply and maintenance echelons have not the mobility of his combat echelon.

The progressive tank officer has a vision of a powerful, well-balanced team... Such a dream will become a reality only by a reorganization which will exploit fully the powers of the tank and provide those elements which are normal and necessary to every tank fight.³⁷

And so Brett, a realist and a thoroughly experienced tank officer, added his voice to those of the "progressives" demanding change.

As the time drew nearer to establish the Mechanized Force, more articles on the subject by Cavalrymen started to appear in The Cavalry Journal. In April 1930 Majors George Patton and C. C. Benson co-authored "Mechanization and Cavalry." Patton had written several articles previously that showed his thoughts evolving as tank improvements were made and as armored cars started to appear as auxiliaries to the horse cavalry. Where he had previously argued for a resurrected Tank Corps, over time, Patton began to appreciate the possibilities of mechanization for the Cavalry branch. Unlike Patton, Benson had recognized the potential use of tanks with Cavalry from the beginning.

In their collaborative effort the authors proposed sharing armored force development between Infantry and Cavalry. They also sought to allay the hostility of the horse proponents within their branch.

Instead of rivalry, there should be union to insure strength....The union of cavalry and mechanized units equipped for rapid maneuver would be natural, for they have much in common. Both are highly mobile; their tactics are similar; their actions develop and culminate rapidly; and their commanders, to be successful, must possess like traits. If the 14th Century knight could adapt himself to gun powder, we should have no fear of oil, grease and motors.³⁸

Other Cavalrymen made the case that mechanized forces were the future forces of the Army, and correctly characterized the attitudes of the conservative elements in both the Infantry and the Cavalry branches. In July 1930 Lieutenant Colonel K. B.

Edmunds, Cavalry, published "Tactics of a Mechanized Force: A Prophecy" in The Cavalry Journal.

The Infantry...whose creed is that the sole function of all arms is to assist the advance of the foot soldier and, misled by the characteristics and functions of the World War tank, is inclined to see in this new machine only another auxiliary... (O)ur Cavalry is instinctively hostile to any machine which may supplant the horse, and inclined to disparage its effect. We are retreating to mountain trails and thick woods, hoping that no fast tank can follow.

Edmunds proposed that more progressive approaches should gain the upper hand. He advocated a policy "to encourage the new arm, experiment with it, and bring out its characteristics, both favorable and unfavorable...." At the same time Edmunds saw a role for all arms in a mechanized force organized separate from Cavalry and Infantry. He proposed an organization composed of three basic components, plus auxiliary troops (engineers, anti-aircraft, etc.) and the trains. A shock component or assault echelon would contain light fast tanks. A mopping up and holding component would have machine gun troops. Third would be a self-propelled fire support component. With some exceptions Edmunds believed it would be probable that "the eventual development will be that all vehicles, to include the combat trains, will be mounted on the same chassis as the light tank."³⁹ In summary he noted the obvious tactical benefits of a mechanized force and cautioned against limiting its potential by conservatism and misuse. His prophesy would come true.

As Fiscal Year 1931 arrived, the year when all was to be in place for an effective start for the permanent Mechanized Force, the best laid plan had developed several significant problems.

Most importantly, only a small percentage of the expected appropriation from Congress materialized. The cut back in the budget directly resulted from the Depression and, from the perspective of the Mechanized Force, could not have come at a worse time. Closely linked to the budget reduction was technical difficulty in procuring a new fast tank. The War Department plan called for acquiring enough T1-E1 tanks to complete one tank company in 1931, however the T1-E1 failed the service test. Modifications were made producing a T1-E2, which subsequently failed testing.⁴⁰ So all bets were placed on the latest Christie tank, which was still undergoing testing.

A separate tank improvement project had generated some interest at Fort Meade and provided a questionable interim fix. In seeking to upgrade the M1917 light tank, which was still the tank in the inventory, the Tank Board had replaced the water cooled engines in a number of M1917 tanks with air cooled Franklin engines. These up-graded engines allowed the tank to approach a speed of 9 mph. Although the Tank Board decided that it was not economical to upgrade all the M1917 tanks in the Army, as a stop gap measure seven improved M1917 light tanks were available for use in the Mechanized Force. The Mechanized Force also had the use of four T1-E1 tanks, one T1-E2 tank, and several T-1 series carriers mounting artillery and the 4.2 inch mortar.⁴¹

Despite these setbacks, General Summerall, in his last major decision as the Army Chief of Staff, decided to go ahead with the organization of the force. Hoping for the best but willing to

accept something less, he directed that the Mechanized Force be organized, be permanent, and be assembled at Fort Eustis.⁴²

By mid-November 1930 the Mechanized Force of 19 officers and 519 soldiers assembled for duty.

The Mechanized Force was a much-reduced organization from the plan. In actual strength it was battalion-sized organization. Still it was a truly combined arms organization for the most part. It had a headquarters company for command and control. An armored car troop for reconnaissance and security. Its tank company had 22 tanks of several different models that it could use for assaulting and exploitation. An antiaircraft detachment was mounted on trucks. A motorized machine gun company existed to hold ground. For supporting firepower there was a field artillery battery, consisting of both porteeed guns and self-propelled guns, and a chemical detachment with 4.2 inch self-propelled mortars that could fire high-explosive as well as smoke or chemical rounds. A motorized engineer company enhanced mobility with portable bridges. There was also an ordnance company and a quartermaster detachment. Thus despite its small size and the combination of experimental as well as old equipment, the Mechanized Force was balanced in supporting arms.

Those serving with the Mechanized Force were enthusiastic but highly conscious of its limitations. Captain Arthur R. Wilson, a Field Artillery officer serving with the Mechanized Force, summed up the feelings of his fellow leaders concerning the limitations of equipment: "Tactical doctrine should not be predicated on vehicles available; rather the place that

mechanized forces will have in the Army...should first be decided upon." Once the requirements were known vehicles and weapons systems could be developed to "satisfactory (sic) fulfill its given missions."

Despite the limitations imposed by existing equipment the Mechanized Force significantly advanced the maturity of armored doctrine. The task organization and the tactical principles applied then are familiar to all serving armored leaders today. Captain Wilson described a two day field exercise in June 1931. Reading Wilson's account of the exercise today it is hard to believe that he was talking about an event some sixty years ago and more than ten years before World War II. A 90+ mile road march was to culminate in a hasty attack upon an advancing enemy.

In the tactical play Colonel Van Voorhis was made aware of the general presence of a moving enemy force. He immediately issued a warning order followed sometime later by an operations order. At 0345 hours the reconnaissance element consisting of the Armored Car Troop (-) and an engineer section moved out. The advance guard followed closely behind and consisted of the machine gun company (-), and the other armored car platoon. The command group followed next. This consisted of the commander, the S-3, the S-2, and the signal officer with his message center.

At 0500 hours under the control of the executive officer, the main body moved out in three sections. The first section consisted of the tank company, the engineer company(-), an anti-aircraft squad, and the headquarters group(-). The second section had the artillery battery, another antiaircraft squad,

the chemical detachment with its smoke delivering mortars, and the remaining machine gun platoon. The third section was the combat trains, which also included one antiaircraft squad. The last element in the column was the base group, or what we call today the field trains.

Several hours later, when the armored car scouts made contact with the enemy, they developed the situation and called the remainder of the Force into position. The machine gun squads set up a base of fire to pin down the enemy while the scout cars fixed the enemy's flanks.

When the main body then deployed, Wilson made a statement that clearly illustrated the dramatic shift in the tactical use of tanks in the Mechanized Force away from the accepted use in Infantry. Wilson said that "the tank company is the shock element of the Force; all other units are auxiliaries to it." This view was exactly the reverse of tanks as auxiliaries to the infantry, the doctrinal derivative of the National Defense Act of 1920.

While the tanks maneuvered toward the enemy, the artillery and the mortars set up to provide indirect fire support. Additionally a self-propelled 75mm gun from the artillery battery had been attached to each tank platoon in an antitank, anti-materiel role. This idea was to be used extensively in World War II with the creation of antitank units.

Wilson was greatly impressed with the ability of the different branches to work together and with the synergistic effect of the combined arms team. He described the exercise as "the most

interesting of the many maneuvers held so far" and was one that showed the Force could "cover long distances on a strategic and tactical march, and...go into combat at the end of the tactical march."⁴³ Major Grow, the Force S-3 officer and a future World War II armored division commander, was equally impressed. Long after, his The Ten Lean Years noted that, despite the difficulties the Mechanized Force faced, the tactics it developed "in large measure withstood the test of World War II."⁴⁴

While the Mechanized Force was involved in training, Major C. C. Benson was already proposing the next step. In January 1931, his "Tank Divisions" gave a detailed proposed tank division table of organization and equipment.⁴⁵ His premise was that the mobilization plans prepared by the Army Staff made no provision for high mobility armored forces. Noting this to be a serious omission, should the nation have to mobilize for war, he proposed to correct it. Clearly he expected criticism:

it may appear premature to proceed with organization before we have had some experience in handling modern equipment. There are, however, excellent reasons for so doing. Our general mobilization plan fails in its purpose if it does not include all the units that we may expect to mobilize. To produce and maintain equipment for mechanized units will impose a heavy burden on certain of our industries. They should be fully prepared to assume that burden in war-time, but procurement plans cannot take definite shape until definite tables of organization are provided.... We do not hesitate to change infantry or cavalry tables of organization; nor should we hesitate to publish tables for mechanized units, even though they will be subject to change. Whether perfect or not, tables of organization should be authorized. So long as our plans are merely on paper, changes cost us nothing. The first step is to get an adequate organization established as a basis for future plans and studies.

For authoritative support, Benson quoted former Chief of Staff, Summerall:

Not again can we expect our allies to contain the enemy for more than a year and furnish us with all the essential munitions while we are organizing our armies.⁴⁶

Fortunately for this country, Summerall proved incorrect in his prediction, even though he was entirely correct in his admonition that the Army must be ready. Today the Chief of Staff uses a similar approach in his slogan, "No more Task Force Smiths!"

Summerall notwithstanding, Benson's sense of urgency and single-mindedness was not shared by all. In November 1931, when General Douglas MacArthur replaced General Summerall, a very different view of the Army's mechanization experiment prevailed.

The Mechanized Force Becomes Cavalry

The original War Department plan purposefully established the Mechanized Force as both a permanent and independent unit responsible directly to the Chief of Staff. The plan called for a force structure that would mature and expand three years in synchronization with the delivery of new tanks and other vehicles. The selection of Fort Eustis as its base was intended to help protect its independence while keeping it close to the War Department for support and control.

MacArthur's replacing Summerall disrupted the plan. The new Chief of Staff immediately directed a review of the mechanization efforts across the Army. Contrary to Summerall, he concluded

that mechanization should not be centralized but that every branch ought to conduct its own modernization program. In particular he targeted the Mechanized Force. Again, a decision at a critical time in the light of history reflects a lack of strategic vision and illustrates one of the many shortcomings of the interwar Army.

On May 18, 1931 General MacArthur released a statement, published in both The Cavalry Journal and The Infantry Journal. Under the title "Mechanized Force Becomes Cavalry" The Cavalry Journal published the release, which stated in part that, "to enable the Cavalry to develop its organization and equipment so as to maintain its ability under modern conditions ...(t)he Mechanized Force will be reorganized as a reinforced cavalry regiment...." By this plan "appropriate equipment" would be absorbed by a designated cavalry unit. "To provide for future development of...mechanized cavalry units perhaps larger than a regiment," some of the artillery and maintenance units remained attached to what became "the Detachment for Mechanized Cavalry Regiment." The infantry-tank mission reverted to the very narrow mission of supporting infantry line units. The stated infantry-tank mission was to train with infantry units to develop the best method of tank support for infantry units.

Now that Cavalry had the mandate to experiment with tanks as the core of a mechanized regiment, a way had to be found to get around the National Defense Act of 1920 which defined "tank" development as the domain of Infantry. A euphemism "combat car" was coined in the Chief of Staff's statement:

'The 'tank' is properly the term that will be used when this vehicle is employed with infantry. When it is employed as a part of the equipment of cavalry, it may ...then be given the name 'combat car.'⁴⁷

There is much written about why this move by the Chief of Staff came to pass. The substance of the published sources indicate that one or two influential cavalrymen got the upper hand at headquarters of the Army. Seeing the opportunity to save the Cavalry branch, which was rapidly becoming anachronistic, they persuaded a new infantry-oriented Chief of Staff to overturn the policy of his predecessor.⁴⁸ Be that true or not, the new policy effectively terminated the special relationship of the Mechanized Force to the War Department and the Chief of Staff, removed the infantry-tank contribution from center stage, and relegated the effort to a small subset of the Cavalry branch.

Colonel Van Voorhis tried unsuccessfully to overturn this decision. He did not want this force to be designated cavalry and he had grown very attached to the tanks. Major Grow noted at the time of the disbanding of the Force that Colonel Van Voorhis was most affected by the loss of the tanks.⁴⁹ The independent Mechanized Force was disbanded in September. Most of the participating units returned to their installations. As the tanks returned to Fort Meade, Major Brett returned to Fort Benning.

Many have argued that this policy of MacArthur's would seriously degrade the Army's modernization efforts for the next ten years.⁵⁰ The Detachment for Mechanized Cavalry Regiment moved to Fort Knox in late 1931 and struggled for years to regain the momentum lost by the disbanding of the Mechanized Force.

Lieutenant Colonel Adna Chaffee, who had actually arrived at Fort Eustis in July to replace Brett, played heavily, almost single-handedly, in efforts over the next decade.⁵¹ The mechanized detachment grew to a regiment in 1933, when the 1st Cavalry Regiment moved to Fort Knox. In 1936, when the 13th Cavalry Regiment was added, the organization became the 7th Cavalry Brigade (Mechanized). During this time Chaffee served in a number of key positions -- sometimes, back on the War Department staff, where he could influence actions and allocate funds. He eventually took command of the brigade in late 1938.

Even with Chaffee's best efforts, it took eight hard years to mechanize the brigade -- not the three years planned for in the War Department directive for the Mechanized Force. In the spring of 1934, when the "mechanized" regiment made its first public appearance on maneuvers at Fort Riley the 1st Cavalry Regiment had only six "combat cars" -- actually Christie tanks -- and eighteen trucks, painted with yellow bands to simulate tanks.⁵² Tanks were slowly added. In 1935 the Army finally produced a standardized tank, the M-1. By November 1938 the 7th Cavalry Brigade, with both cavalry regiments in the brigade, was equipped with only a total of 56 tanks. By 1939 the mechanized brigade finally received the remaining tanks for a total of 112.

Equipping the brigade with tanks was only one problem. The "cavalry" designation of the brigade impeded the evolution of a balanced combined arms organization. In April 1935 a mechanized artillery battalion was added to the brigade and the approval came to increase the density of tanks in the 1st Cavalry

Regiment. In response, Major General Hughes, the Assistant Chief of Staff (G3), complained to Chief of Staff that the 7th Cavalry Brigade (Mechanized) was starting to look less like a cavalry organization and more like a mechanized force. In the summer of 1936 the 1st Cavalry Regiment (Mechanized), participating in the 2d Army Maneuvers, had support of a National Guard motorized infantry regiment. As was the case with the Mechanized Force, motorized infantry proved extremely valuable to mechanized cavalry. However, in December 1936, when Major General Van Voorhis, who now commanded Fort Knox, asked to increase the infantry structure of the Brigade above the authorized platoon, his request was denied.⁵³ So until the Louisiana Maneuvers in 1940, when a Regular Army infantry regiment was attached, the 7th Cavalry Brigade would not be a truly combined-arms team.

The Fate of Infantry-Tanks

The Chief of Staff's policy change was a crushing blow to the Infantry-Tank officers who had struggled so long to produce an armored and balanced combined-arms team. One author said these officers now felt "disenfranchised."⁵⁴ The Chief of Infantry, Major General Stephen O. Fuqua, had formally opposed a separate Mechanized Force. He saw this policy change as reinforcing the primacy of infantry riflemen and vindication of his opposition to the progressive mechanization advocates within his branch.

Major General Fuqua immediately took action to bring the Infantry-Tank wing under control. In July 1931 he disbanded the

Tank Board as a separate activity and transferred the tank functions to the Infantry Board located at Fort Benning. He likewise closed down the Tank School at Fort Meade after the class of 1932 finished and transferred the school to Fort Benning.

As his testimony before the House Committee on Appropriations indicated General Fuqua saw all these changes benefitting the Infantry. With the Tank School "amalgamated with the Infantry School" all Infantry School Instruction would then be combined in one place. All could "train together, learn the possibilities and limitations of the various *Infantry weapons* (author's italics added), ... (and) be able to develop a course of instruction...to turn out thoroughly capable Infantry officers...." The schools would "carry on a *certain degree of instruction in tank tactics* (author's italics added) for all officers...." The Infantry Board's absorbing the duties of the Tank Board would consolidate all projects relating to Infantry development.

In response to probing by the subcommittee chairman about the reason for the disbanding of the Mechanized Force, General Fuqua clearly showed his understanding of the shift from an infantry-tank and combined-arms involvement to a Cavalry show.

Mr. Collins: And the reason that the mechanized force at Fort Eustis was broken up was so that the present divisions of the Army would remain intact, and each of them would have a taste of mechanization?

General Fuqua: I believe the underlying reason for it was in order to assign to the Cavalry this mechanized mission and place the responsibility for developing it on that arm of service."

Despite this retrenchment, the Chief of Infantry had trouble keeping his Infantry-Tank officers in line. Major Brett, no doubt very much upset by this Johnny-come-lately approach by the Cavalry, was now a member of the Infantry Board. Brett remained an outspoken advocate of a mechanized combined-arms team. Also active was Major Ralph Jones, a member of the Tank Board until its consolidation with the Infantry Board and a primary writer for the tank portion of the Infantry Field Manual, published at this time. The chapter entitled "Tank Units" gave tank tactics a larger role than accompanying infantry in the attack. Fast tanks could form the core of an "armored or mechanized force" and undertake decisive and independent missions.⁵⁶

In 1933 The Fighting Tanks Since 1916 appeared, this book was jointly authored by Jones and two others: Captain George Rarey, a Tank School technical instructor, and 1st Lieutenant Robert Icks, an Infantry Reserve Officer who was interested in world wide tank production. An almanac of the many tanks produced by the armies of the world at the time was Ick's contribution; a history of US tank participation in World War I was Rarey's contribution. Beyond these parts were several chapters devoted to the tactical uses of tanks and speculation on future uses where data was lacking. In the section on combat principles of armored and mechanized forces, no doubt, Jones wrote the criticism of US efforts. The passage complained that "The method of operation of an armored force is largely a theoretical matter in the United States" because the US was "markedly slow in acquiring the fast tanks and auxiliaries that are required in

order that the necessary experimental maneuvers with such equipment may proceed."⁵⁷

The chapter on tank employment concluded that "Under the appropriate conditions, the use of tanks, or an armored force consisting largely of tanks, independent of other types of troops, may be fully justified."⁵⁸ These thoughts are clearly vintage Jones and this book probably circulated widely among infantry-tank ranks, since it was extensively advertised in The Infantry Journal. Thus, one way or another, Fort Benning tank instructors continued to espouse the possibilities for independent tank action.

De facto rebellion continued in other ways. In summer of 1933, General Fuqua was replaced by General Edward O. Croft as Chief of Infantry. General Croft, previously in the office of the Assistant Chief of Staff, was very familiar with the creation and the disbanding of the Mechanized Force. Like his predecessor he wanted to censor the still-vocal mechanized force advocates in the Infantry-Tank ranks. On 8 August 1933 he sent a memorandum to the President of the Infantry Board to lay down the law once and for all:

At the outset I consider it important to circumscribe our problem. The Cavalry has been charged with the development of mechanized forces. So we may leave to the Cavalry the item of independent tank action and concentrate on the uses of tanks in the Infantry.

On 25 August, 1933 the Infantry Board responded, in effect rejecting the implied guidance:

(We) "cannot agree that our problem has been circumscribed by what has been charged to the Cavalry. Present authority is not interpreted to define the role of the cavalry to be the responsibility for development

and employment of tanks, nor is it believed that the cavalry has accepted such responsibility.⁵⁹

The Infantry Board also expressed dissatisfaction with the existing Infantry-Tank organizations. Those, as Brett had argued before, were not balanced and unfit for modern combat:

(The board) "desires to go on record, based on experience with a limited number of fast tanks and experience in war and peace with slow tanks, that the present organization is not suitable in many major respects for modern warfare.

It is not certain how the Chief of Infantry responded; only that the two key Tank-Infantry officers were reassigned. Major Sereno Brett was sent to the Army War College. Selection was a branch-quota process and therefore could be influenced by the Chief of the branch. At the War College Brett was given the task to make a staff recommendation concerning mechanized experimentation in the 1st Cavalry (Mechanized).⁶⁰ Why and for what purpose is unclear; but, upon graduation, Brett was sent far away from tanks and placed in the mainstream of his branch. Transferred to Hawaii, he received command of a pure infantry battalion. Major Jones was also removed from tanks and placed on Army Reserve duty until his retirement in 1939.⁶¹ At least one author, Mildred Gillie, in Forging the Thunderbolt, considered these assignments as banishment. Gillie remarked that Jones had been "exiled."⁶²

This interpretation may gain support from trends in the journals. For the next several years articles on tank related subjects again took a downward turn. Those that do appear in The Infantry Journal mostly reported on experimentation with existing tanks, noted what other armies were doing, commented on

what the mechanized cavalry was doing, and carried pronouncements from the Chief of Infantry that the tank was to advance the cause of the Infantryman.

One article did bring continued attention on the obvious evolution of the 1st Cavalry (Mechanized) into something other than just mechanized Cavalry. In the January-February 1935 edition of The Infantry Journal, Lieutenant Colonel Lee D. Davis, Infantry, published "The New Arm" in which he noted a new arm of the service was developing, despite a change in branch responsibility. He argued that:

there is more difference between old time cavalry and mechanized cavalry than a change of locomotion, and a mechanized force, as we know it today, is not cavalry. Neither is it infantry or artillery; it is a new arm.... The object of mechanization is to get fast-moving protected firepower.... Viewed from any point, save possibly that of cost, the land mechanized forces would seem to be entitled to a separate organization.⁶³

While the Chief of Infantry was having trouble squashing progressive mechanization advocates in his branch, benign neglect seemed to prevail in the Cavalry. There was little in The Cavalry Journal on the subject of mechanization immediately after the Chief of Staff gave the mission to Cavalry. The reason for that is not hard to determine. Although the Cavalry was to carry forward with the mechanized experimentation already begun, the work was restricted to a very small segment of the Cavalry -- at first only a regiment. There were specific reasons: The Chief of Cavalry did not support mechanized cavalry and would not sacrifice horse cavalry regiments to gain mechanized cavalry regiments. Moreover there had been no tradition of mechanization

in the Cavalry, nor support structure as the Infantry had so long in the Tank School and Tank Board at Fort Meade. Finally there was not a body of mechanized cavalry enthusiasts ready to ponder the possibilities; instead interest was limited to very few beyond those in the 1st Cavalry (Mechanized), who were off by themselves at newly established Fort Knox.⁶⁴

The Second External Catalyst

As storm clouds gathered over Europe the Infantry School persisted in ignoring directives from the Chief of Infantry and continued to teach the use of tanks in cooperation with other arms for deep and decisive operations.⁶⁵ The European armies were also doing so and concerned officers were following the European trends very carefully.

In late 1937 two articles entitled "Armored Forces" appeared in The Infantry Journal. These were authored by the German tank officer, Major General Heinz Guderian. In Part I, published in September-October, Guderian advocated organizing armored forces into large tactical organizations to deliver surprise attacks with concentrated strength. In Part II he continued his argument for deep and decisive attacks with fast armored vehicles. Across the top of this article the editor of The Infantry Journal had placed a banner that read "Cooperation Between Armored Forces and Other Arms."

Soon a rush of articles in both The Infantry Journal and The Cavalry Journal captured the use of mechanized forces in Spain

and then Poland, and finally the German Blitzkrieg through western Europe. Clearly German success had been achieved in large part by a modern and a balanced mechanized fighting force.

During the final years of the 1930's the mechanized cavalry and the infantry-tank units were equipped with the latest model of light tanks.⁶⁶ Both the 7th Cavalry Brigade (Mechanized) and the infantry-tank units had practiced on field maneuvers with various temporary attachments of motorized infantry and artillery.⁶⁷ In fact, the two mechanized arms of both the Infantry and the Cavalry branches had developed on separate but parallel paths.

While the German armored divisions were pushing through France in May 1940, the now-famous Third Army Maneuvers were being conducted in Louisiana. A sense of purpose was certainly and finally felt by the War Department, which directed that all the tank and mechanized forces be should brought together for the exercise. For the first time, all the tank units in the Army would come together for training and concept testing. The Infantry tank units were organized into a Provisional Tank Brigade under Brigadier General Bruce Magruder. The 7th Cavalry Brigade (Mechanized) was under command of by-then Brigadier General Chaffee.

In the first phase of the maneuvers various supporting units were attached to both the 7th Cavalry Brigade and the Provisional Tank Brigade to test the feasibility of combined arms operations. In the second part of the maneuvers both brigades were organized under one command, which was called the "Provisional Mechanized

Force."⁶⁸ The smooth functioning of the two brigades, working together for the first time without prior rehearsal, was apparent to all but not really surprising, given the complementary evolution both had experienced. To the extent that both brigades were tank-heavy, they were similar organizations that understood similar tactics and procedures.

When the maneuvers ended, on 25 May 1940, the key mechanized leaders met in a local high school to discuss the successes and lessons they had learned. Brigadier General Frank Andrew, Assistant Chief of Staff (G-3), chaired the meeting. Among those present were Generals Chaffee and Magruder, Lieutenant Colonel Sereno Bratt, several executive officers to the generals, and Colonel George Patton, who had been sent as an observer. The consensus was that no longer could any delay in armored force development be tolerated. War with Germany seemed apparent. It was therefore considered essential by all to break away from the current structure and create a separate organization.⁶⁹

The Armored Force

General Andrew took these thoughts back to the War Department and performed some very fast staff work. In less than three weeks, on 10 June 1940, most of this same group -- Patton was one not present -- met again in Washington DC. General Andrew presented the proposal to create the Armored Force. The Army Chief of Staff, General George C. Marshall, listened to the branch chiefs and the other Assistant Chiefs of Staff. The

Cavalry and the Infantry branch chiefs both opposed the proposal, but Marshall debated the issue until he felt he had a near-consensus. He then declared that a separate force would be formed immediately.⁷⁰

Exactly one month later, on 10 July 1940, the War Department announced the creation of the Armored Force. The Armored Force would consist of the 1st Armored Corps initially comprised of two armored divisions and a separate reserve tank battalion. The 1st Armored Division was created from the 7th Cavalry Brigade at Fort Knox and the 2d Armored Division created from the Provisional Tank Brigade at Fort Benning. The 70th General Headquarters Reserve Tank Battalion was created and stationed at Fort Meade. The Armored Force Headquarters was located at Fort Knox. General Chaffee was named the commander of the Armored Force; Colonel Sereno Brett was named the Chief of Staff. Lieutenant Colonel C.C. Benson was named the President of the Armored Board.

One of the very first orders of business was to create an initial table of organization for the two armored divisions. That project was primarily given to a Captain Emerick Kutschko, a staff officer in the War Department G-3 and a former infantry-tank officer. Captain Kutschko had been a Tank School instructor at Fort Meade during those creative years when the Experimental Mechanized Force evolved into the Mechanized Force.⁷¹ His positioning made it more than coincidental that, as Gillie noted in Forging the Thunderbolt, the Armored Force looked a lot like the Mechanized Force writ large.⁷²

In the September-October 1940 issues of both The Cavalry Journal and The Infantry Journal appear articles discussing the creation of the Armored Corps and detailing the organizational structure. An article simply titled "The Armored Corps" The Infantry Journal suggested both promises and uncertainties in the new organization:

The tracks of the vehicles of the Armored Corps are now rolling extensively over all kinds of passable and practically impassable terrain as this newest major unit of the army tries out its tactical methods...All in all its a powerful striking force built up primarily for offensive action as the chart at the top of this page plainly shows. Just what its technique of operation will be - just how it will cooperate with units of the air and other types of corps on the ground to gain its objectives, and just how infantry units of the armored corps will operate - these important aspects will have to wait until a later number of The Journal.⁷³

Of course the Armored Corps would learn to cooperate with air forces and the armored tank-infantry-artillery forces would mature rapidly over the next several years. The first two armored divisions would receive their baptism of fire in North Africa in 1942 and lessons would be learned. Subsequent armored divisions would be organized under different tables of organization and equipment as more effective structure and better equipment was developed.

Conclusion

Despite a slow and painful course, the record points to an evolution of thought and progressive effort during the interwar years. Concerned officers did contribute to the development of

sound armored doctrine and an effective armored force structure. Progress had its fits and starts to be sure, but incrementally went forward. The outcome of some sort of mechanization was inevitable, but the timing was certainly protracted and ultimate shape of organizations determined by factors that could have been mitigated by consistency of direction from senior leaders. Had the Army leadership retained the Tank Corps in 1920 or had the Mechanized Force been allowed to mature under War Department sponsorship, perhaps some sort of armored division would have been organized in the 1930s and the US would have entered World War II with a different force structure and doctrine.

In any event in an era characterized by increasing technological advances, ambiguous security threats and severe budgetary constraints -- the opportunity for visionaries to explore and activists to experiment on a small scale was a trend that persisted over the entire interwar period. Despite the institutional barriers of the times, the potential of armored warfare continuously attracted a number of relatively junior officers who contributed to a fermentation of ideas. A degree of tolerance of deviation, which waxed and waned, allowed the promise of leaps beyond formal doctrine when the threat to national security became well-defined. While it is true that the well-defined threat, to which the US armored forces responded to in the early 1940's, was lessened by the time-distance relationship to areas far from US shores, there are still applicable lessons today. Once again the threat to our national security is ambiguous, the Army budget is shrinking, while

technology continues to advance. Future readiness can perhaps be better assured not by retaining a large force structure but rather by a continued tolerance -- perhaps even an encouragement of contemporary visionaries the likes of Chynoweth, Benson, Jones and Brett who contributed so much to their Army of the interwar period.

Endnotes

1. Because citations from The Infantry Journal and The Cavalry Journal are used so extensively, only one endnote will be used per article. The endnote will appear at the end of the last quote from an article and will record the pages of the quoted article in its entirety.
2. Sereno E. Brett would be the only officer who served with tanks in combat in World War I who would remain with tanks his entire career. He retired as a Brigadier General in 1943.
3. "Report of the Chief of the Tank Corps", Fort Meade, MD, 30 June 1920, p. 1891, MHI.
4. Kenneth Macksey, The Tank Pioneers, (London: Jane's, 1981), p. 3.
5. Patton left Fort Meade for Fort Meyer for duty with the 3d Cavalry. He would spend more than half his career in the Washington, DC, area where he would be able to monitor tank and armored development. He would not contribute to armored development, but with his connections he would be able to take command of a brigade in the newly formed 2d Armored Division in July 1940.
6. Captain D. D. Eisenhower, "A Tank Discussion," The Infantry Journal, November, 1921, pp. 453-458.
7. Dwight D. Eisenhower, At Ease! (Garden City, New York: Doubleday and Company, Inc., 1967), p. 173.
8. Major B. C. Chynoweth, "Tank Infantry," The Infantry Journal, May, 1921, pp. 504-507.
9. Major B. C. Chynoweth, "Mechanical Transport," The Infantry Journal, June, 1921, pp. 561-565.
10. Major B. C. Chynoweth, "Cavalry Tanks," The Cavalry Journal, July, 1921, pp. 247-251. Patton's response is found on pp 251-252.
11. Patton and Chynoweth knew each other from a previous assignment. Chynoweth sent Patton a copy of his article requesting Patton's response before the article was to be printed. Patton responded by letter dated 8 March, 1921. The letter was published almost verbatim in the Cavalry Journal. The Bradford Chynoweth Papers, Box 3, MHI.

12. Chnyoweth's articles apparently were kept on file at the Tank School for some years and made available to students. Brigadier General Sidney R. Hinds remembers being shown one of Chyoweth's articles when he was a student at the Fort Meade Tank School in 1928-29. In a letter to Lieutenant General Willis D. Crittenberger in 30 May, 1971 Hinds remembers a particular article as "very strong and far seeing." The Willis Crittenberger Papers, Box: Oral History, MHI.

13. In a personal letter to Colonel George S. Pappas, 24 October 1967, Chynoweth details an increasingly stormy relationship with Rockenbach. Eventually Chynoweth had enough and secured his departure from Fort Meade. "Recollections of Bradford G. Chynoweth", p. 20, Box 3, Chynoweth Papers, MHI.

14. By 1925 Brett's experience with tanks and tank organizations was unequalled. He had commanded the 15th Tank Battalion at Fort Benning and was a Tank Instructor at the Infantry School 1920-22; he commanded the Experimental Tank Force in Panama 1923-24; he had been the Executive Officer of the 1st Tank Group, Plans and Training Officer for the 1st Tank Group and Adjutant to the Tank School at Fort Meade. At the time of publication of this article he was commanding the 16th Tank Battalion.

15. Captain Sereno E. Brett, "Tank Combat Principles," The Infantry Journal, February, 1925, pp. 132-141.

16. Colonel Rockenbach is characterized in all sources as a keeper of the "status quo." This was in sharp contrast to many of his officers, such as Eisenhower and Chynoweth, who were pushing for greater utilization of the tank. His replacements were perceived differently. Colonel Cooper in particular seems to have been inclined to accept a broader view. He was first stationed at Fort Meade in 1925 and became the Tank School Commandant in 1930 at the age of 61. In 1933, a book written by three Tank Officers, The Fighting Tanks Since 1916, was dedicated to him.

17. Colonel J. C. F. Fuller, "Tactics and Mechanization," The Infantry Journal, May 1927, pp. 457-466. The discussion follows on page 466 with comments by Brigadier General Rockenbach. Colonel Cohen's statement is found on page 468.

18. David E. Johnson, "Fast Tanks and Heavy Bombers - The United States and the Development of Armor and Aviation Doctrines and Technologies, 1917-1945" (PH.D. dissertation, Duke University, 1990), p. 172.

19. Letter, BG Sidney Hinds to MG Crittenberger, 30 May 1971, The Willis Crittenberger Papers, Box: Oral History, MHI.

20. Major Ralph E. Jones, "The Tactical Influence of Recent Tank Developments," The Infantry Journal, May, 1928, pp. 457-467.

21. Major Ralph E. Jones, "Future Tank Organization, " The Infantry Journal, July, 1928, pp. 17-19.

22. Normally these prototype tanks would have undergone technical testing first at Aberdeen Proving Ground before being shipped to the Tank School at Fort Meade. It was the special circumstances of the temporary EMF that caused this change in procedure. The EMF was to test the combined arms concept with the fast tank as the core vehicle. The T1-E1 tanks were the only "fast" tanks available. "History of the Development of the Light Tank," Correspondence from the Office of the Chief of Infantry, 10 July, 1928, Box 92, Record Group 177, NA.

23. Mildred Gillie, Forging the Thunderbolt (Harrisburg, PA.: Military Service Publishing Co., 1947), p. 22.

24. Major C. C. Benson, "Mechanization - Aloft and Alow," The Infantry Journal, June, 1929, pp. 20-24.

25. Johnson, "Fast Tanks and Heavy Bombers," pp. 225-226.

26. "A Mechanized Force - Proceedings of a board of officers", Memorandum to the Adjutant General, October 1, 1928 (War Department, Washington, DC), p.21. File 84-20, AWC Curricular Archives, MHI.

27. The Chief of Infantry was definitely opposed to the creation of the Mechanized Force which he believed was an attempt to create a new branch and take tanks away from the Infantry. See Johnson, p. 222.

28. The intent was to rise above branch politics. The Chief of Infantry was the only branch chief to oppose the creation of the Mechanized Force, but the board wanted to ensure that the personality selected was strong enough to sufficiently resist the overtures of any branch chief. "A Mechanized Force - Proceedings of a board of officers," p. 35.

29. Both Gillie in Forging the Thunderbolt and Grow in The Ten Lean Years comment on Van Voorhis' administrative talents. They also noted that Van Voorhis was much saddened by the decision to transfer the Mechanized Force to the Cavalry branch. He was a strong believer in the requirement to be independent of the existing branches. See Grow pp. 5 and 11. See Gillie pp. 39 and 46.

30. Brett was so much a part of tank and armored developments that he was present for every tank model test and force structure experiment. Although stationed at Fort Benning while the

Experimental Force was in being he had been sent TDY to Fort Meade for the entire period. He was considered absolutely essential to the success of the Mechanized Force because of his unmatched experience.

31. Johnson, p. 165.

32. Major Levin H. Campbell, Jr., "A New Weapon of Warfare - the Mechanized Force," The Infantry Journal, April, 1929, pp. 359-365.

33. Major Ralph E. Jones, "Shall We Armor or Mechanize?," The Infantry Journal, July, 1929, pp. 54-55.

34. Major C. C. Benson, "The New Christie, Model 1940," The Infantry Journal, September, 1929, pp. 255-261.

35. Major Ralph E. Jones, "Our Tanks," The Infantry Journal, December, 1929, pp. 594-600.

36. Lieutenant Dache M. Revves, "Organization and Composition of a Mechanized Force," The Infantry Journal, December, 1929, pp. 612-618.

37. Major Sereno E. Brett, "Tank Reorganization," The Infantry Journal, January, 1930, pp. 28-32.

38. Major G. S. Patton, Jr., and Major C. C. Benson, "Mechanization and Cavalry," The Cavalry Journal, April, 1930, pp. 374-376.

39. Lieutenant Colonel K. B. Edmunds, "Tactics of a Mechanized Force: A Prophecy," The Cavalry Journal, July, 1930, pp. 410-417.

40. Correspondence, Office Chief of Infantry, Box 92, Record Group 177, NA.

41. Captain Arthur Wilson, "The Mechanized Force: Its Organization and Present Equipment," The Infantry Journal, May-June, 1931, pp. 253-254.

42. Gillie, p. 36.

43. Captain Arthur R. Wilson, "With the Mechanized Force on Maneuvers," The Infantry Journal, July-August, 1931, pp. 331-335.

44. Grow, p. 15.

45. In 1942, more than ten years after Benson argued for the creation of armored divisions he would be the Chief of Staff of the 2d Armored Division in North Africa. He would retire as a Colonel in 1950.

46. Major C. C. Benson, "Tank Divisions," The Infantry Journal, January-February, 1931, pp. 15-19.
47. "Mechanized Force Becomes Cavalry," The Cavalry Journal, May-June, 1931, pp. 5-6.
48. Both Johnson and Gillie believe the break up of the Mechanized Force and the transference of the experimentation mission was the work of two cavalymen - MG Van Horn Moseley, the Deputy Chief of Staff and Lieutenant Colonel Adna Chaffee, a member of the War Department G-3. See Johnson p.308; see Gillie pp. 45-47.
49. Grow, p. 11.
50. Therefore the inspiration for the title of Grow's publication The Ten Lean Years. It is apparent that decentralizing such a difficult effort as standardizing mechanized chassis across the branches was bound for failure. The Infantry had been given the lead in producing a standard tank in 1920 and was unable to do so for 15 years due to coordination problems primarily between the Infantry and Ordnance branches. How could further diffusion be better? D. Clayton James in The Years of MacArthur, Volume 1, (Houghton Mifflin Co., Boston, 1970), noted that "The decentralization of the Army's program of mechanization, according to most later authorities, retarded its development of armored warfare tactics.", p. 358.
51. It must have been an interesting situation with both Chaffee and Brett on the same small piece of turf at this time. It is known that both Van Voorhis (the CO) and Brett (the XO) wanted to see the Mechanized Force succeed. As mentioned in an earlier endnote some believe that Chaffee had a major hand in causing the Mechanized Force to be transferred to the Cavalry. Perhaps this was not known at the time by Van Voorhis and Brett, for if it was known or even suspected it would have made for a very unpleasant working environment. In any case almost ten years later Brett would be the Chief of Staff for the Armored Force and Chaffee would be his Commander.
52. Gillie, p. 62.
53. Johnson, pp.325-329.
54. Gillie, pp. 69-70.
55. General Fuqua's testimony is found in the July-August 1932 edition of The Infantry Journal in the article "Major General Stephen O. Fuqua, Chief of Infantry, Before the Subcommittee of House Committee on Appropriations," pp. 245-255.

56. When the Tank Board was consolidated with the Infantry Board at Fort Benning, Major Jones remained at Fort Meade to command the 1st Battalion, 1st Tank Regiment.

57. Ralph E. Jones, George H. Rarey, and Robert J. Icks, The Fighting Tanks Since 1916 (Washington, DC: The National Service Publishing Company, 1933), p. 281.

58. Ibid., p. 179.

59. "Views of the Chief of Infantry on Tanks" with attached response from the Infantry Board. Correspondence, Office Chief of Infantry, Box 83, Record Group 177, The National Archives.

60. Sereno E. Brett, "Mechanized Cavalry", Memorandum for the Assistant Commandant, May 5, 1934, Army War College Curricular Archives, File 407-9, MHI.

61. Ralph E. Jones' later career was tracked by following his location in the Army Lists and finally the Army Register.

62. Gillie states on page 70 that Major Jones was sent to Fort Crook, Nebraska, "the Siberia of Infantry posts." The Army List does not mention an assignment to Fort Crook, but rather initially to Fort Benjamin Harrison and then to Grand Rapids, Michigan, with the Organized Reserves where he remained until his retirement.

63. Lieutenant Colonel Lee D. Davis, "The New Arm," The Infantry Journal, January-February, 1935, pp. 55-56.

64. Very little was written about the experimentation in the 1st Cavalry (Mechanized). However The Cavalry Journal had a section in each issue devoted to current activity in the regiments. Under the "Organized Activities" section events in the 1st Cavalry Regiment (Mechanized) can be easily followed. Other than these routine announcements, the primary contributors to the Cavalry Journal on the subject of cavalry mechanization were Colonel Bruce Palmer, the Commander of the 1st Cavalry and Major Robert W. Grow, now S-3 of the 1st Cavalry and later author of The Ten Lean Years.

65. Memorandum to the Commandant, The Infantry School, Subject: "Instruction in Tank Tactics," 28 August 1937. The Office of the Chief of Infantry admitted that Infantry tank units may be attached to the mechanized cavalry to assist in pursuit and exploitation and therefore some cross-training was appropriate. "The **emphasis** in training will, however, be placed upon the use of tanks in support of infantry units." Correspondence from the Office of the Chief of Infantry, Box 82, Record Group 177, NA.

66. The infantry-tank units consisted of the 66th Infantry Regiment (light Tanks), three battalions of light tanks formed from the consolidated of the existing infantry division tank companies, and F Company, 67th Infantry Regiment (medium tanks). This last company was stationed at Fort Benning to support the Infantry School and also served as the experiment company. As such it was outfitted with several models of tanks.

67. See Vernon G. Olsmith, "Tanks, Trucks, Troops," The Infantry Journal, (September-October 1936), pp. 402-407 as one example of combined arms maneuvers. Lieutenant Colonel Olsmith discussed a Fourth Corps Area maneuver involving a motorized infantry regiment (-) task organized with a battalion of fast tanks. In all cases the writer was impressed with the ability of the new tanks and the potential of the task organized force.

68. Historical Section, Army Ground Forces, Study No. 27, History of the Armored Force, Command and Center, (Washington, DC: 1946), p. 7.

69. Ibid., pp. 7-8.

70. Gillie, p. 165.

71. Captain Emerick Kutschko was stationed at Fort Meade in 1930 when the Commandant, Colonel Parsons, first proposed organizing tank divisions. Colonel Parsons then drew up Tables of Organization (T/O) which he presented to the Army Chief of Staff. The proposal was rejected at the time as being premature. However the Tables of Organization were brought to the Command and General Staff College where they were part of the curriculum as an exercise by the students for several years. After Captain Kutschko finished his staff proposal for the two armored divisions in 1940, he was provided a copy of Colonel Parson's proposal of ten years earlier. Kutschko is quoted in Study No. 27, The History of the Armored Force, p. 6, as saying that Colonel Parson's proposed table of organization was "astoundingly similar to our Armored Division T/O of 1940, both in composition and strength. Had I discovered it sooner, it would have saved me untold hours of labor."

72. Gillie, p. 173.

73. "The Armored Corps," The Infantry Journal, September-October, 1940, pp. 436-439.

Bibliography

- Brett, James Sereno. Correspondence with author, 17 December, 1992.
- Brett, Sereno E. "Mechanized Cavalry." Memorandum prepared for the Assistant Commandant of the Army War College, Washington, DC, 5 May 1934. File Number 4079, Army War College Curricular Archives.
- Civil Military Training Corps Yearbooks - 1930, 1931. Fort Meade, MD.
- Croft, Edward. "Mechanized Force." Memorandum for the Chief of Staff, Army. 20 October, 1930. File Number 84-29. Army War College Curricular Archives.
- Eisenhower, Dwight D. At Ease! New York: Doubleday Company, Inc., 1967.
- Farago, Ladislas. Patton - Order and Triumph. New York: Ivan Obolensky, Inc., 1963.
- Gillie, Mildred. Forging the Thunderbolt. Harrisburg, PA: Military Service Publishing Co., 1947.
- Grow, Robert W. "The Ten Lean Years." Manuscript dated February, 1969.
- Historical Section, Army Ground Forces. History of The Armored Force, Command and Center. Study Number 27, Army Ground Forces, 1946.
- James, D. Clayton. The Years of MacArthur, Volume 1. Boston: Houghton Mifflin Co., 1970.
- Johnson, David E. "Fast Tanks and Heavy Bombers - The United States and the Development of Armor and Aviation Doctrines and Technologies." Ph.D. dissertation, Duke University, 1990.
- Jones, Ralph E., Rarey George H., and Icks Robert J. The Fighting Tanks Since 1916. Washington, DC: The National Service Publishing Co., 1933.
- Macksey, Kenneth. The Tank Pioneers. London: Jane's, 1981.
- Nenninger, Timothy. "The Development of American Armor, 1917-1940." Unpublished Ph.D. dissertation, University of Wisconsin, 1968.

Office of the Chief of Infantry Correspondence. Various correspondence, Series 407.8, Boxes 80-93. Record Group 177, The National Archives.

Office of the Commandant, Tank School. "American Tanks Since the World War." Camp Meade, MD, 1 February, 1925.

Ogorkiewicz, Richard M. Armor: A History of Mechanized Forces. New York: Praeger, 1960.

The Cavalry Journal. 1920-1940.

The Infantry Journal. 1920-1940.

The Tank Corps. "Report of the Chief of the Tank Corps." Camp Meade, MD, 1919, 1920.

"The Tank School Notes." Mimeographed collection published by the Tank School, Fort Meade, MD, 1924, 1925, 1930, 1931, 1932.

US Army Military History Institute. Archives, The Bradford Chynoweth Papers.

US Army Military History Institute. Archives, The Willis D. Crittenberger Papers.

Viner, Joseph W. Tactics and Techniques of Tanks Since the World War. Fort Leavenworth, KS: The General Service Schools Press, 1920.

War Department Annual Reports. Washington, DC: 1930, 1931, 1932, 1934, 1935.

War Department. "A Mechanized Force - Proceedings of a Board of Officers." Washington, DC: 1 October, 1928. File 84-20. Army War College Curricular Archives.

War Department. Infantry-Tank Board. Army Regulation 75-60. Washington, DC: 30 April, 1926; Change 1, 31 July 1931.

Wilson, Dale E. Treat 'Em Rough. Navato, CA: Presidio Press, 1989.